TCM-929/939

SERVICE MANUAL

US Model
TCM-929
Canadian Model
AEP Model
UK Model
E Model
Australian Model
TCM-939

Photo: TCM-939

Model Name Using Similar Mechanism	TCM-919
Tape Transport Mechanism Type	MT-929

SPECIFICATIONS

Recording system
2-track 1 channel monaural
Frequency range
150 - 8,000 Hz
Speaker
Approx. 6.6 cm (2⅝ in.) dia.
Power output
400 mW (at 10 % harmonic distortion)
Input
Microphone input jack (minijack) sensitivity 0.775 mV for low impedance microphone
Output
Earphone jack (minijack) for 8 - 300 ohms earphone
Power requirements
- Four size AA (R6) batteries (not supplied): 6V DC
- DC IN 6 V jack accepts:
  Supplied AC power adaptor suitable in the country where the unit is to be used.

Dimensions (w/h/d) (incl. projecting parts and controls)
Approx. 144 × 60 × 237 mm
(5 ¾ × 2 ⅜ × 9 ⅜ in.)
Mass (not incl. batteries)
Approx. 675 g (23.9 oz.)
Supplied accessories
AC power adaptor (1)
(US, Canadian and European model only)

Design and specifications are subject to change without notice.

CASSETTE CORDER

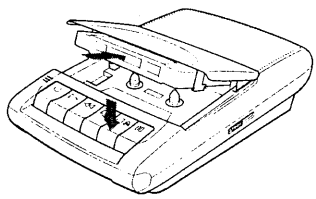
SONY®

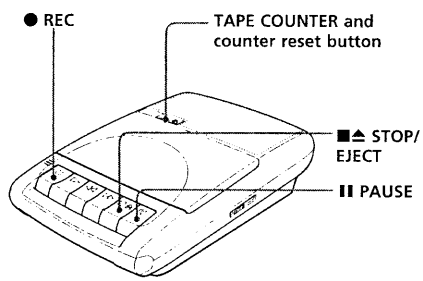
This section is extracted from instruction manual.

SECTION 1
GENERAL

Recording

You can record right away with the built-in microphone. Make sure that nothing is connected to the MIC jack.





1 Press the counter reset button to reset the TAPE COUNTER.

2 Press ■⏏ STOP/EJECT to open the cassette holder.

3 Insert a TYPE I (normal) tape with the side to start recording facing upward, and close the cassette holder.

4 Press ● REC.
► PLAY is depressed automatically.

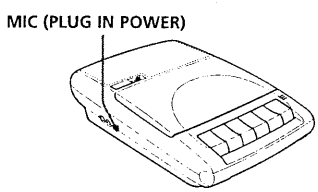
At the end of the tape, recording stops and the unit turns off automatically.

To	Press
Stop recording	■⏏ STOP/EJECT
Pause recording	II PAUSE Press the button again to resume recording.

Notes

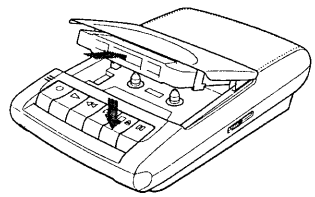
- You cannot monitor the recording sound.
- For recording, we recommend the use of TYPE I (normal) tapes only. Do not use TYPE II (CrO_2) and TYPE IV (metal) tapes.

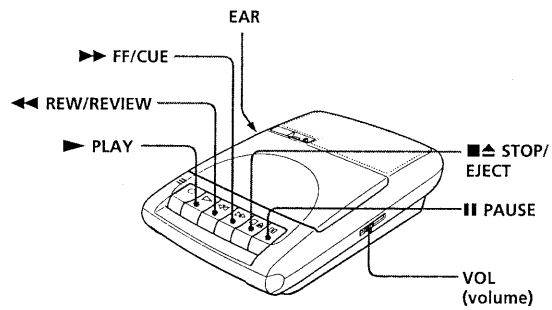
Recording with an External Microphone



Connect a microphone of low impedance (not supplied) to the MIC jack. The built-in microphone is automatically disconnected. When using a plug-in-power system microphone, the power to the microphone is supplied from this unit.

Playing a Tape





1 Press ■⏏ STOP/EJECT to open the cassette holder.

2 Insert a TYPE I (normal) tape with the side to start play facing upward, and close the cassette holder.

3 Press ► PLAY then adjust the volume.

At the end of the tape, playback stops and the unit turns off automatically.

To	Press or slide
Stop playback/stop fast forward or rewind	■⏏ STOP/EJECT
Pause playback	II PAUSE Press the button again to resume play.
Search forward during playback (CUE)	Press and hold ►► FF/CUE and release it at the point you want
Search backward during playback (REVIEW)	Press and hold ◄◄ REW/REVIEW and release it at the point you want
Fast forward	►► FF/CUE during stop
Rewind	◄◄ REW/REVIEW during stop

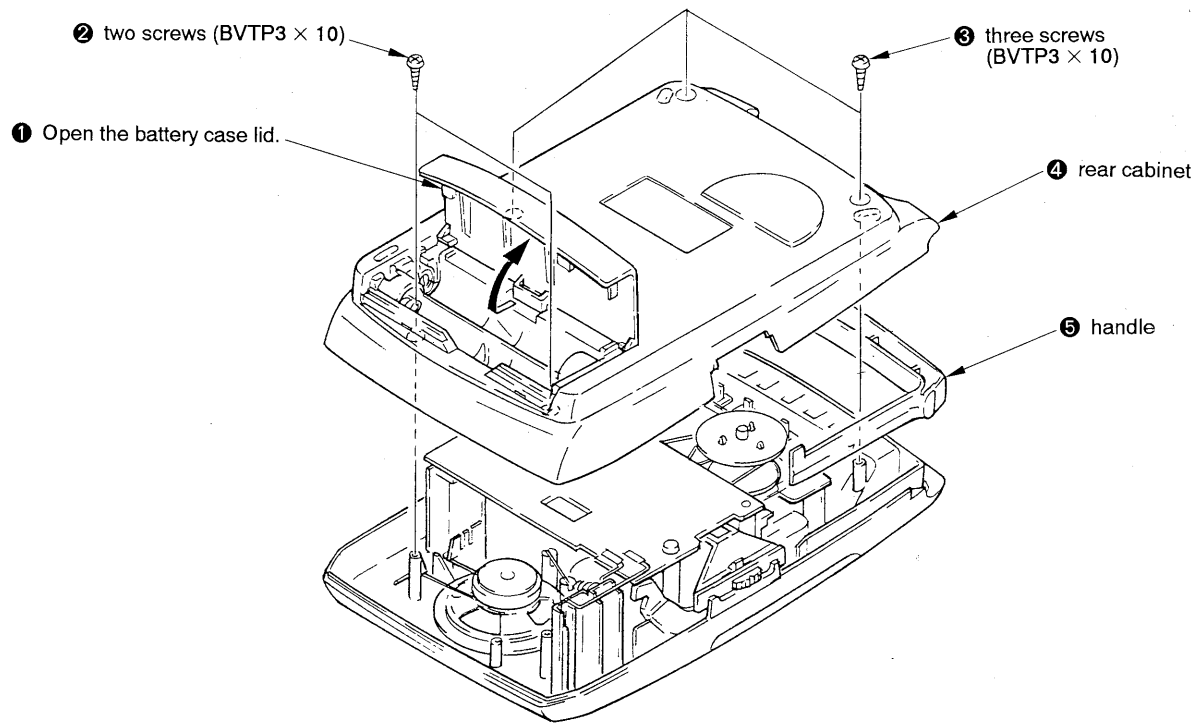
At the end of the tape
All the locked buttons will be automatically released (Full auto shut-off mechanism).

To listen with an earphone
Connect an earphone (not supplied) to the EAR jack of the unit. The built-in speaker will be automatically disconnected.

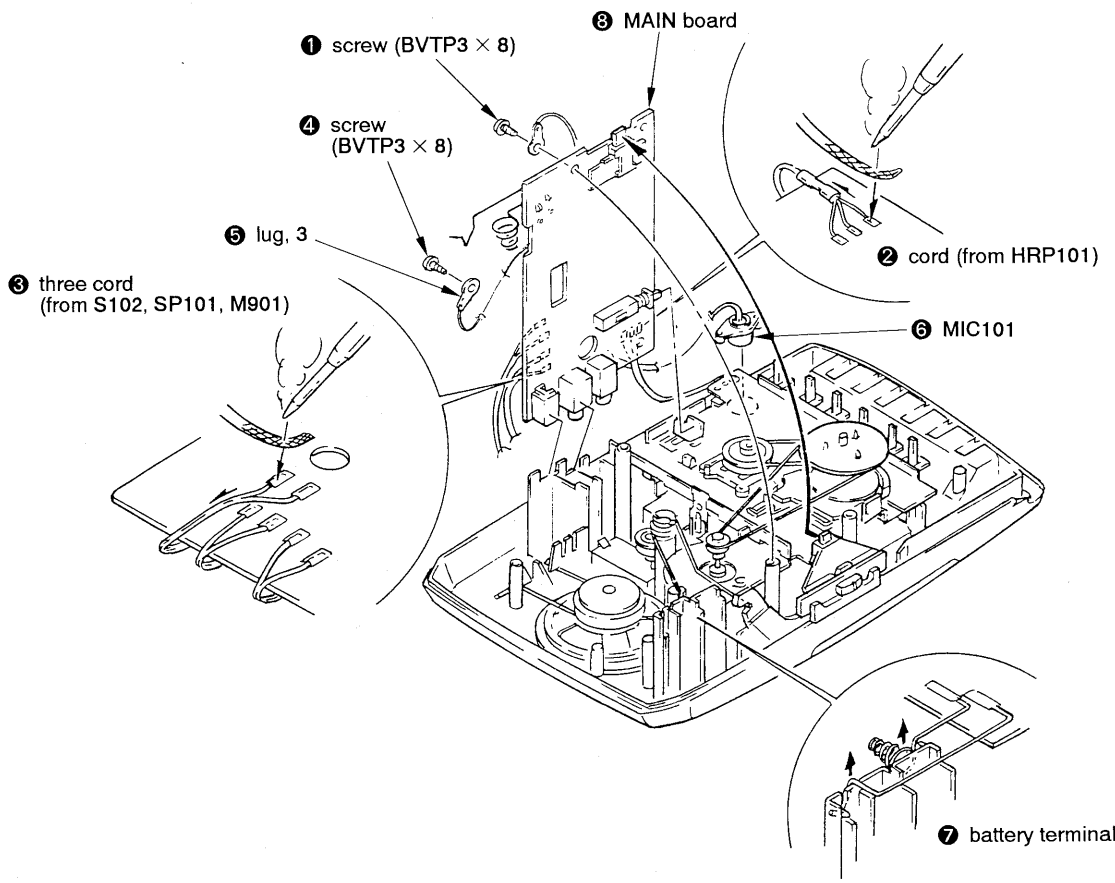
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

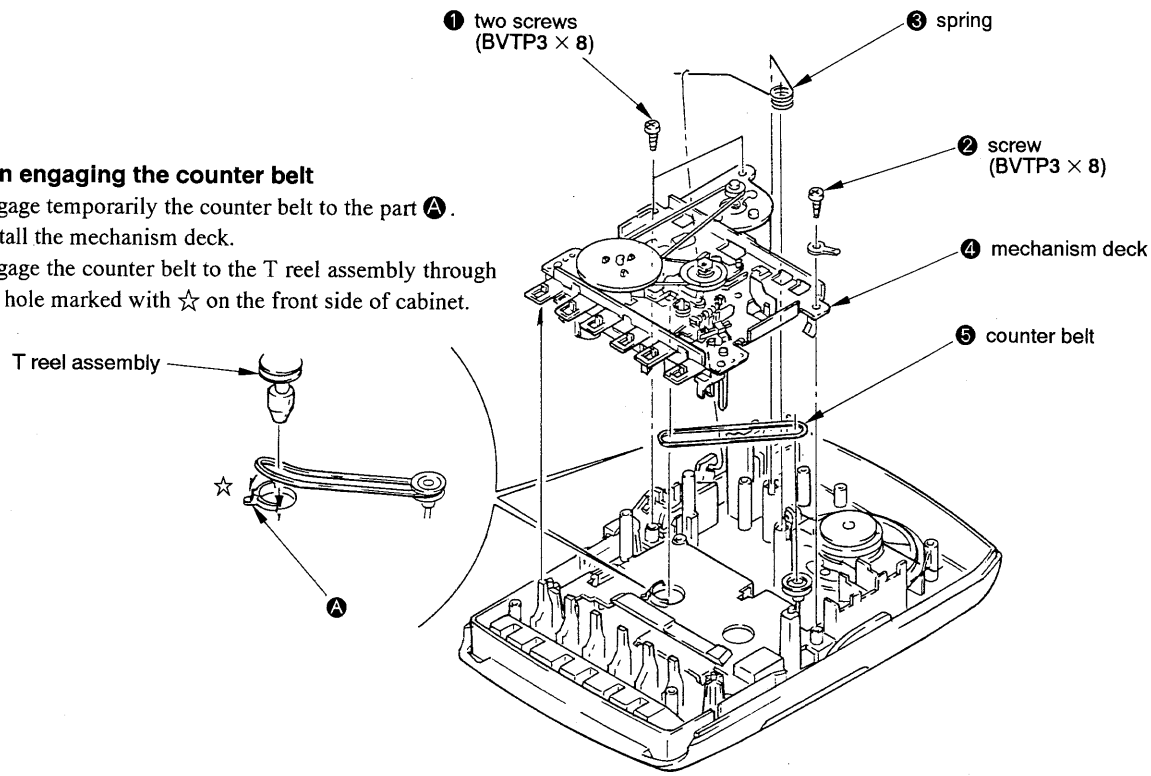
REAR CABINET



MAIN BOARD


❽ MAIN board
❶ screw (BVTP3 × 8)
❹ screw (BVTP3 × 8)
❺ lug, 3
❸ three cord (from S102, SP101, M901)
❷ cord (from HRP101)
❻ MIC101
❼ battery terminal

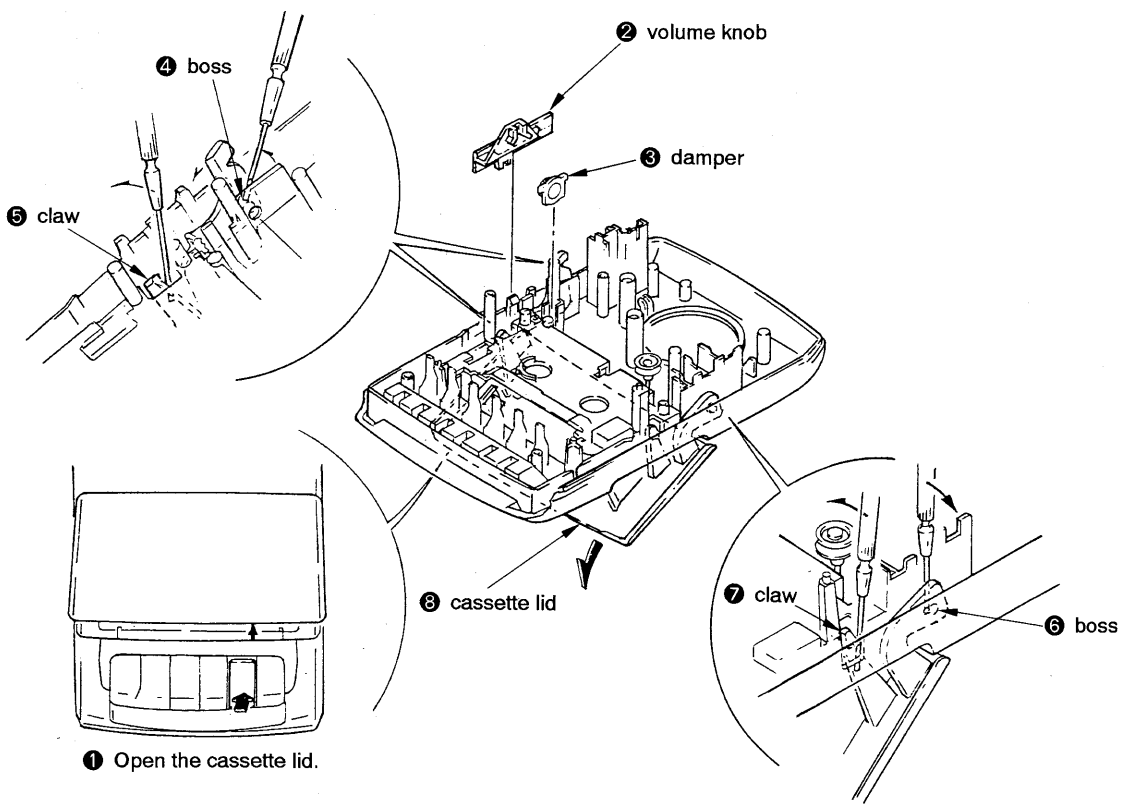
MECHANISM DECK



Note on engaging the counter belt

1. Engage temporarily the counter belt to the part Ⓐ.
2. Install the mechanism deck.
3. Engage the counter belt to the T reel assembly through the hole marked with ☆ on the front side of cabinet.

CASSETTE LID



SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENT

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   record/playback head — pinch roller
   erase head — rubber belts
   capstan
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments ahould be performed in the rated power supply voltage unless otherwise noted.

Torque Measurement

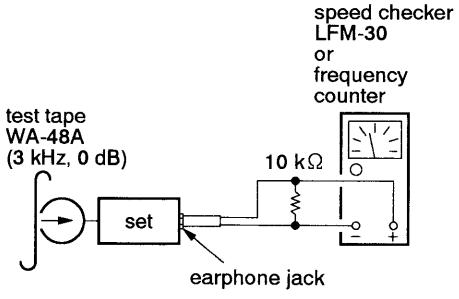
Torque	Torque meter	Meter reading
FWD	CQ-102C	27 to 70 g•cm (0.37 to 0.98 oz•inch)
FWD Back tension	CQ-102C	1.5 to 5.5 g•cm (0.02 to 0.07 oz•inch)
FF, REW	CQ-201B	80 to 156 g•cm (1.12 to 2.1 oz•inch)

3-2. ELECTRICAL ADJUSTMENTS

Tape Speed Adjustment

Setting:
VOL control: mechanical mid.

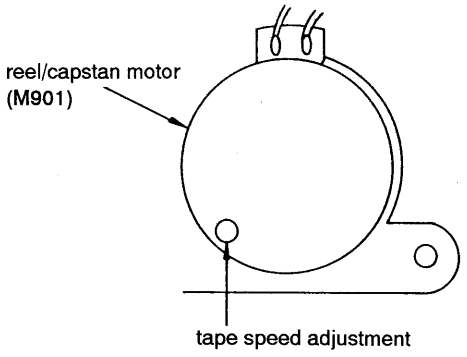
Adjustment Procedure:
1. Mode: Playback



Specification:

Speed checker	Frequency counter
± 3%	2,910 to 3,090 Hz

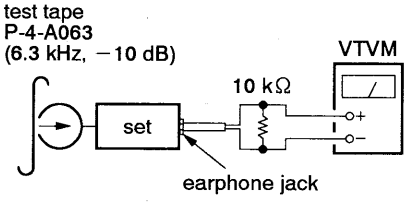
Adjustment Location: Reel/Capstan Motor (M901)



Record/Playback Head Azimuth Adjustment

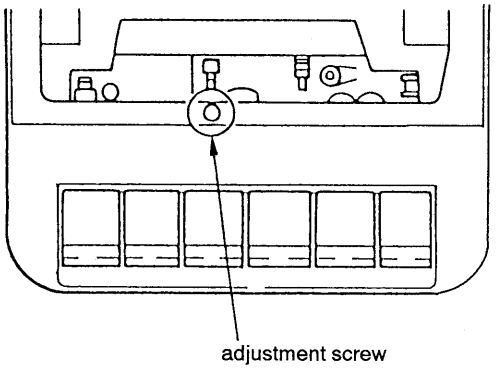
Setting:
VOL control: mechanical mid.

Adjustment Procedure:
1. Mode: Playback



2. Turn the adjustment screw for maximum VTVM reading.
Note: Serval peaks may appear, but take the the maximum.
3. After the adjustment, lock the screws with locking compound.

Adjustment Location: Record/Playback Head

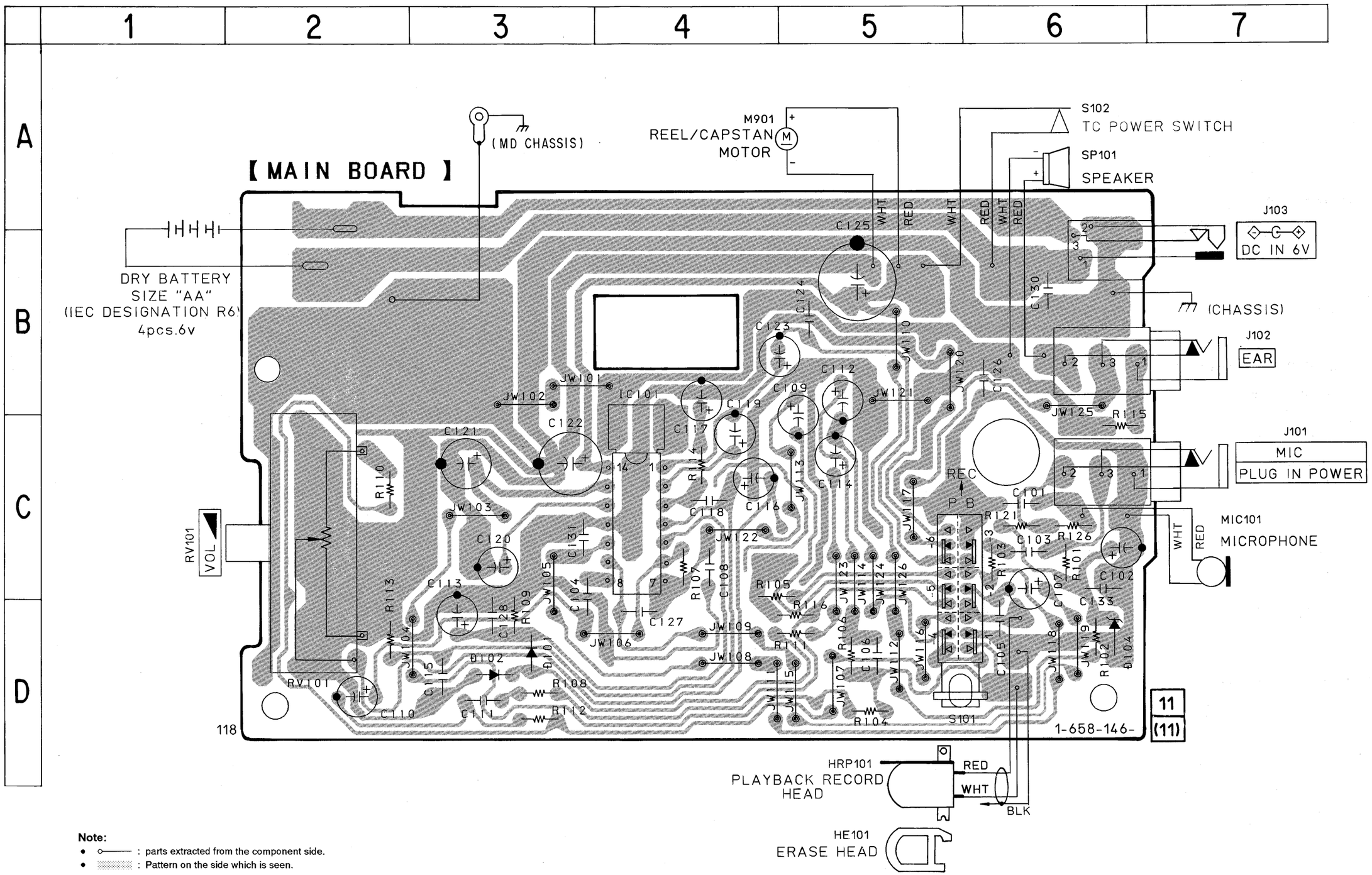


SECTION 4
DIAGRAMS

4-1. PRINTED WIRING BOARD

- **Semiconductor Location**

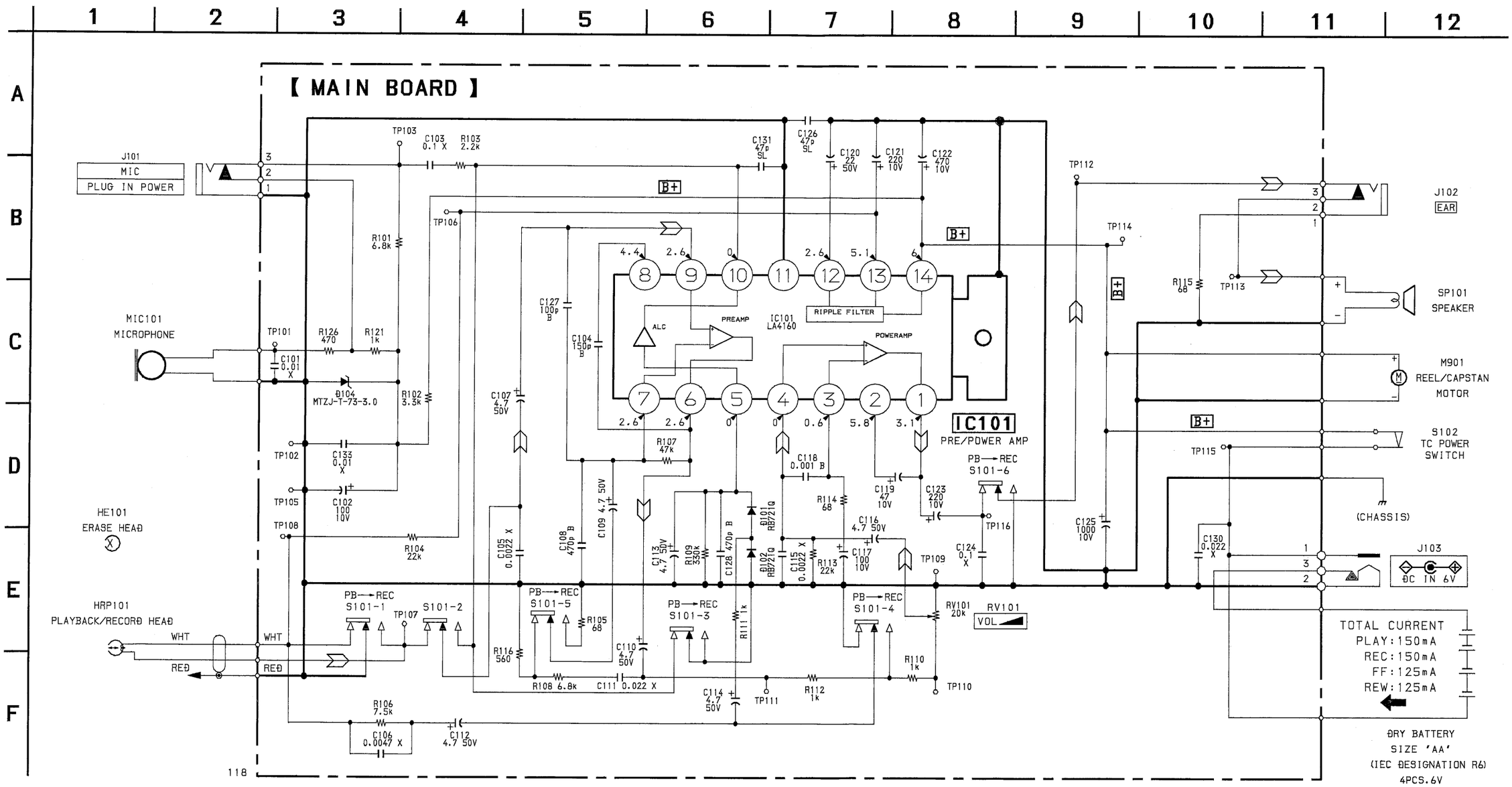
Ref. No.	Location
D101	D-3
D102	D-3
D104	D-6
IC101	C-4



Note:

- ○——— : parts extracted from the component side.
- ▒▒▒ : Pattern on the side which is seen.

4-2. SCHEMATIC DIAGRAM



Note:

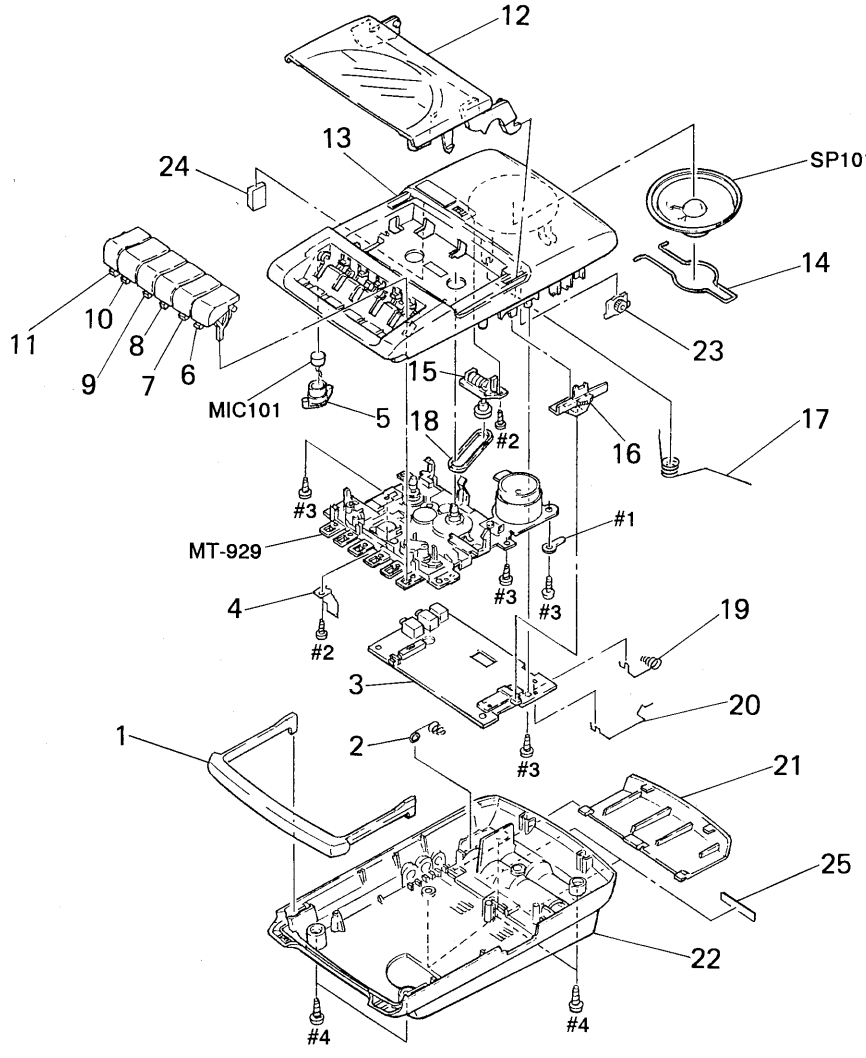
- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- B + : B + Line.
- Power voltage is dc 6 V and fed with regulated dc power supply from external power voltage jack.
- Voltages are dc with respect to ground under no-signal conditions.
  no mark : PLAY
- Voltages are taken with a VOM (10 MΩ/V).
  Voltage variations may be noted due to normal production tolerances.
- Signal path.
  Σ : PB

SECTION 5
EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.
- Model name abbreviation
  929: TCM-929
  939: TCM-939

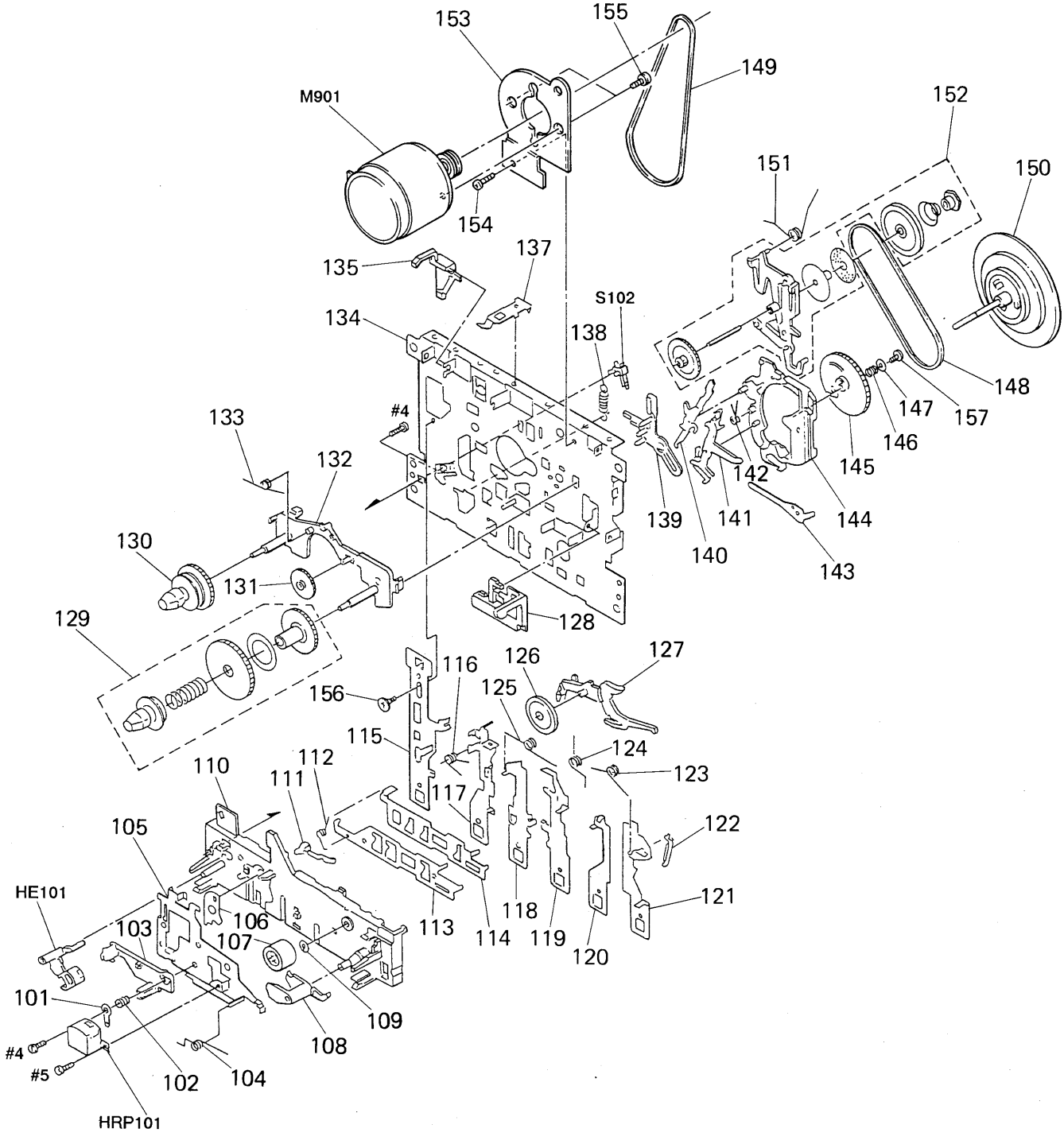
(1) CABINET SECTION



Ref. No.	Part No.	Description	Remark
1	3-928-051-01	HANDLE	
2	3-927-954-01	TERMINAL (+, -), BATTERY	
* 3	A-3061-174-A	MAIN BOARD, COMPLETE	
4	3-927-955-01	LEVER, REC	
* 5	3-348-316-01	CUSHION, MICROPHONE	
6	3-927-963-01	BUTTON (PAUSE)	
7	3-927-964-01	BUTTON (STOP)	
8	3-927-965-01	BUTTON (FF)	
9	3-927-966-01	BUTTON (REW)	
10	3-927-967-01	BUTTON (PLAY)	
11	3-927-962-01	BUTTON (REC)	
12	3-927-969-01	LID, CASSETTE (929)	
12	X-3370-892-1	LID ASSY, CASSETTE (939)	
13	3-927-971-01	CABINET (FRONT)	
14	3-927-956-01	SPRING (SPEAKER)	

Ref. No.	Part No.	Description	Remark
15	1-251-348-11	COUNTER, TAPE	
16	3-927-968-01	KNOB (VOL)	
17	3-927-960-01	SPRING (CASSETTE)	
18	3-927-957-01	BELT, COUNTER	
19	3-927-958-01	TERMINAL (-), BATTERY	
20	3-927-959-01	TERMINAL (+), BATTERY	
21	3-927-961-01	LID, BATTERY CASE	
22	3-927-970-01	CABINET (REAR) (929)	
22	3-927-970-11	CABINET (REAR) (939:Canadian)	
22	3-927-970-21	CABINET (REAR) (939:AEP, UK, E, Australian)	
23	3-928-052-01	DAMPER	
24	3-930-739-01	PLATE REINFORCE	
25	3-930-740-01	CUSHION	
MIC101	8-814-186-00	MICROPHONE, ELECTRET CONDENSER	
SP101	1-504-970-11	SPEAKER (6.6CM)	

(2) MECHANISM DECK SECTION
(MT-929)



Ref. No.	Part No.	Description	Remark
101	3-363-230-01	LUG	
102	3-362-985-01	SPRING	
103	3-362-986-01	HOLDER, HEAD	
104	3-362-983-01	SPRING	
* 105	3-362-984-01	HEAD (BASE)	
106	3-385-832-01	LINK, CR	
107	3-362-982-01	PINCH ROLLER	
108	3-362-981-01	PINCH ARM	
109	3-362-980-01	WASHER	
110	3-385-819-01	FRAME ASSY	
111	3-385-831-01	ARM, CR	
112	3-385-821-01	SPRING	
113	3-385-820-01	PLATE, FUNCTION	
114	3-385-822-01	LEVER, SW	
* 115	3-362-947-01	LEVER, REC	
116	3-362-954-01	SPRING	
* 117	3-362-948-01	LEVER, PLAY	
* 118	3-362-949-01	LEVER, REW	
* 119	3-362-950-01	LEVER, FF	
120	3-385-824-01	LEVER, SE	
* 121	3-362-952-01	LEVER, PAUSE	
122	3-362-953-01	ARM, PAUSE	
123	3-362-957-01	SPRING	
124	3-362-956-01	SPRING	
125	3-362-955-01	SPRING	
126	3-362-960-01	PULLEY, IDLER	
127	3-362-959-01	ARM, IDLER	
128	3-362-968-01	LEVER, EJECT	
129	3-362-962-01	REEL ASSY, T	
130	X-3363-611-1	REEL, S ASSY	

Ref. No.	Part No.	Description	Remark
131	3-362-965-01	IDLER, FF	
132	3-362-961-01	SPINDLE (BASE)	
133	3-372-120-01	SPRING	
* 134	3-362-941-01	CHASSIS	
135	3-385-825-01	INTERLOCK	
137	3-362-967-01	SPRING, CASSETTE	
138	3-362-971-01	SPRING	
139	3-362-972-01	SENSOR	
140	3-362-976-01	LEVER, CONTROL	
141	3-362-975-01	LEVER, SENSOR	
142	3-362-977-01	SPRING	
143	3-362-978-01	SPRING, PLATE	
144	3-362-973-01	AS (BASE)	
145	X-3363-315-1	GEAR, CAM ASSY	
146	3-369-962-01	SPRING, COMPRESSION	
147	3-369-961-01	WASHER	
148	3-385-829-01	BELT	
149	3-928-053-01	BELT (Y TYPE)	
150	3-385-827-01	FW ASSY	
151	3-362-970-01	SPRING	
152	3-385-826-01	IDLER ASSY, PF	
* 153	3-385-828-01	HOLDER, MOTOR	
154	3-363-229-01	SCREW	
155	3-385-830-01	SCREW	
156	3-362-958-01	SCREW	
157	3-366-352-01	SCREW	
HE101	1-500-009-11	HEAD, MAGNETIC (ERASE)	
HRP101	1-543-410-11	HEAD, MAGNETIC (REC/PB)	
M901	X-3366-071-1	MOTOR ASSY (REEL/CAPSTAN)	
S102	1-572-538-11	SWITCH, LEAF (TC POWER)	

MAIN

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Model name abbreviation
  929:TCM-929
  939:TCM-939
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description			Remark
*	A-3061-174-A	MAIN BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-161-051-00	CERAMIC	0.01uF	10%	25V
C102	1-126-933-11	ELECT	100uF	20%	10V
C103	1-161-772-11	CERAMIC	0.1uF	20%	16V
C104	1-102-108-00	CERAMIC	150PF	10%	50V
C105	1-161-043-00	CERAMIC	2200PF	10%	50V
C106	1-161-047-00	CERAMIC	0.0047uF	10%	50V
C107	1-126-963-11	ELECT	4.7uF	20%	50V
C108	1-102-114-00	CERAMIC	470PF	10%	50V
C109	1-126-963-11	ELECT	4.7uF	20%	50V
C110	1-126-963-11	ELECT	4.7uF	20%	50V
C111	1-161-055-00	CERAMIC	0.022uF	10%	50V
C112	1-126-963-11	ELECT	4.7uF	20%	50V
C113	1-126-963-11	ELECT	4.7uF	20%	50V
C114	1-126-963-11	ELECT	4.7uF	20%	50V
C115	1-161-043-51	CERAMIC	2200PF	10%	50V
C116	1-126-963-11	ELECT	4.7uF	20%	50V
C117	1-126-933-11	ELECT	100uF	20%	10V
C118	1-102-074-00	CERAMIC	0.001uF	10%	50V
C119	1-126-967-11	ELECT	47uF	20%	10V
C120	1-128-551-11	ELECT	22uF	20%	25V
C121	1-126-923-11	ELECT	220uF	20%	10V
C122	1-126-925-11	ELECT	470uF	20%	10V
C123	1-126-923-11	ELECT	220uF	20%	10V
C124	1-161-772-11	CERAMIC	0.1uF	10%	25V
C125	1-126-926-11	ELECT	1000uF	20%	10V
C126	1-101-880-00	CERAMIC	47PF	10%	50V
C127	1-102-106-00	CERAMIC	100PF	10%	50V
C128	1-102-114-00	CERAMIC	470PF	10%	50V
C130	1-161-055-00	CERAMIC	0.022uF	10%	50V
C131	1-101-880-00	CERAMIC	47PF	10%	50V
C133	1-161-051-00	CERAMIC	0.01uF	10%	25V

Ref.No.	Part No.	Description			Remark
		< DIODE >			
D101	8-719-049-26	DIODE	RB721Q		
D102	8-719-049-26	DIODE	RB721Q		
D104	8-719-982-51	DIODE	MTZJ-T-73-3.0		
		< IC >			
IC101	8-759-821-14	IC	LA4160		
		< JACK >			
J101	1-566-740-11	JACK (MIC, PLUG IN POWER)			
J102	1-566-740-11	JACK (EAR)			
J103	1-568-907-31	JACK, DC (POLARITY UNIFEID TYPE) (DC IN 6V)			
		< RESISTOR >			
R101	1-249-427-11	CARBON	6.8K	5%	1/4W
R102	1-249-423-11	CARBON	3.3K	5%	1/4W
R103	1-247-839-31	CARBON	2.2K	5%	1/4W
R104	1-249-433-11	CARBON	22K	5%	1/4W
R105	1-249-403-11	CARBON	68	5%	1/4W
R106	1-247-852-11	CARBON	7.5K	5%	1/4W
R107	1-249-437-11	CARBON	47K	5%	1/4W
R108	1-249-427-11	CARBON	6.8K	5%	1/4W
R109	1-247-891-00	CARBON	330K	5%	1/4W
R110	1-249-417-11	CARBON	1K	5%	1/4W
R111	1-249-417-11	CARBON	1K	5%	1/4W
R112	1-249-417-11	CARBON	1K	5%	1/4W
R113	1-249-433-11	CARBON	22K	5%	1/4W
R114	1-249-403-11	CARBON	68	5%	1/4W
R115	1-249-403-11	CARBON	68	5%	1/4W
R116	1-247-825-31	CARBON	560	5%	1/4W
R121	1-249-417-11	CARBON	1K	5%	1/4W
R126	1-247-823-31	CARBON	470	5%	1/4W
		< VARIABLE RESISTOR >			
RV101	1-223-955-11	RES, VAR, SLIDE (VOL)			

REVISED

MAIN

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S101	1-762-546-11	SWITCH, SLIDE (PB/REC SWITCH)	

****

MISCELLANEOUS

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15	1-251-348-11	COUNTER, TAPE	
HE101	1-500-009-11	HEAD, MAGNETIC (ERASE)	
HRP101	1-543-410-11	HEAD, MAGNETIC (REC/PB)	
M901	X-3366-071-1	MOTOR ASSY (REEL/CAPSTAN)	
MIC101	8-814-186-00	MICROPHONE, ELECTRET CONDENSER	
SP101	1-504-970-11	SPEAKER (6.6CM)	
S102	1-572-538-11	SWITCH, LEAF (TC POWER)	

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ACCESSORIES & PACKING MATERIALS

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⚠	1-466-977-11	ADAPTOR, AC (AC-E616) (929)	
⚠	1-466-978-11	ADAPTOR, AC (AC-E616) (939:UK)	
⚠	1-466-979-11	ADAPTOR, AC (AC-E616) (939:AEP)	
⚠	1-467-198-11	ADAPTOR, AC (AC-E616) (939:Canadian)	
⚠	1-467-894-11	ADAPTOR, AC (939:Australian)	
	3-800-701-11	MANUAL, INSTRUCTION (ENGLISH) (929)	
	3-800-730-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH) (939)	
	3-800-730-21	MANUAL, INSTRUCTION (GERMAN, DUTCH, SWEDISH) (939:AEP)	
	3-800-730-31	MANUAL, INSTRUCTION (ITALIAN, POTUGUESE) (939:AEP, E)	
	3-930-070-01	INDIVIDUAL CARTON (929)	
	3-930-071-01	INDIVIDUAL CARTON (939 : Canadian)	
	3-930-072-01	INDIVIDUAL CARTON (939 : AEP, UK)	
	3-930-074-01	INDIVIDUAL CARTON (939 : Australian)	
	3-930-075-01	INDIVIDUAL CARTON (939 : E)	

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HARDWARE LIST

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#1	7-623-508-01	LUG, 3
#2	7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT
#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#4	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S
#5	7-621-255-25	SCREW +PTT 2X4 (S)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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